LONG-TERM SURVEILLANCE PLAN
FOR THE
DOE TENNESSEE VALLEY AUTHORITY (UMTRCA TITLE II) DISPOSAL SITE
EDGEMONT, SOUTH DAKOTA

June 1996

Prepared for
U.S. Department of Energy
Grand Junction Projects Office
Grand Junction, Colorado

Contents

Contents (continued)

Figures

Tables

Plates

(in pocket in back)

1.0 Introduction

1.1 Purpose

This Long-Term Surveillance Plan (LTSP) explains how the U.S. Department of Energy (DOE) will fulfill general license requirements of 10 CFR 40.28 as the long-term custodian of the former Tennessee Valley Authority (TVA) Uranium Mill Tailings Disposal Site, at Edgemont, South Dakota.

1.2 Legal and Regulatory Requirements

The Uranium Mill Tailings Radiation Control Act (UMTRCA) of 1978 (42 USC § 7901) as amended, provides for the remediation (or reclamation) and regulation of uranium mill tailings at two categories of mill tailings sites, Title I and Title II. Title I includes former uranium millsites that were unlicensed, as of January 1, 1978, and essentially abandoned. Title II includes uranium milling sites under specific license as of January 1, 1978. In both cases, the licensing agency is the U.S. Nuclear Regulatory Commission (NRC), or in the case of certain Title II disposal sites, an Agreement State. The former TVA Edgemont site is a Title II site under UMTRCA. The State of South Dakota is not an Agreement State.

Federal regulations at 10 CFR 40.28 provide for the licensing, custody, and long-term care of uranium and thorium mill tailings sites closed (reclaimed) under Title II of UMTRCA.

> A general license is issued [by the NRC] for the custody...and long-term care, including monitoring, maintenance, and emergency measures necessary...to ensure that uranium and thorium mill tailings disposal sites will be cared for in such a manner as to protect the public health, safety, and the environment after closure [completion of reclamation activities].

The general (long-term custody) license becomes effective when the current specific license is terminated by the NRC or an Agreement State, and when a site-specific LTSP, this document, is accepted by the NRC.

Requirements of the LTSP and general requirements for the long-term custody of the Edgemont site are addressed in various sections of the LTSP (Table 1-1).

Table 1–1. Requirements of the LTSP and for the Long-Term Custodian (DOE) of Edgemont Site.

Requirements of LTSP

Requirement	Location
1. Description of final site conditions	Section 2.0
2. Legal description of site	Section 2.3.1
3. Description of the long-term surveillance program	Section 3.0
4. Criteria for follow-up inspections	Section 3.5.1
5. Criteria for maintenance and emergency measures	Section 3.6.3

Requirements for the Long-Term Custodian (DOE)

Requirement	Location
1. Notification to NRC of changes to the LTSP	Section 3.1
2. NRC permanent right-of-entry	Section 3.1
3. Notification to NRC of significant construction, actions, or repairs at the site	Sections 3.5 and 3.6

1.3 Role of the Department of Energy

In 1988, the DOE designated the Grand Junction Projects Office (GJPO) to be the program office for long-term surveillance and maintenance of all DOE remedial action project disposal sites, as well as other sites (including Title II sites) as assigned, and to establish a common office for the security, surveillance, monitoring, and maintenance of these sites. The DOE established the Long-Term Surveillance and Maintenance (LTSM) Program at the GJPO to carry out this responsibility.

The LTSM Program is responsible for the preparation, revision, and implementation of this LTSP, which includes site inspection, monitoring, and maintenance. The LTSM Program is responsible for annual and other reporting requirements and for maintaining records pertaining to the site.

2.0 Final Site Conditions

Reclamation at the TVA mill facility in Edgemont, South Dakota, consisted of demolishing site structures, excavating, and relocating the mill tailings and contaminated structural materials to the Edgemont disposal site approximately 2 miles south of the mill site. The mill site property was then reclaimed and released. Radioactive material associated with the DOE cleanup of the Edgemont, South Dakota, Vicinity Properties was also disposed of in the cell. The Edgemont disposal site is fenced and revegetated with native grasses.

2.1 Site History

The mill was constructed in 1956 and was operated by Mines Development, Inc., a subsidiary of Susquehanna-Western, Inc., of Chicago, Illinois. The initial capacity of 250 tons of ore per day was expanded within a year to 500 tons per day (FBD 1978).

Most of the ore processed at Edgemont was mined by the company on a lease basis. Mines were located primarily in the Black Hills area of southwestern South Dakota and northeastern Wyoming, but a considerable amount of ore was shipped from near Douglas, Wyoming (FBD 1978).

TVA acquired the mill facility in August 1974, including the mineral rights to approximately 99,000 acres of exploration properties at Edgemont, South Dakota. On the basis of engineering, economic and environmental studies, TVA decided against using the mill for processing uranium ore. Consequently, the mill was never operated by TVA (TVA 1990). As a result of not operating the mill, NRC issued an amendment to the TVA Source Materials License requiring TVA to decommission the mill and the associated contaminated materials. Decommissioning activities began in 1986 and were completed in 1989. Approximately 4 million tons of tailings, contaminated native soil, building equipment, and debris were removed from the Edgemont processing site and placed in the repository 2 miles away.

2.2 General Description of the Disposal Site Vicinity

The Edgemont disposal site is located approximately 2 miles south of the Town of Edgemont in Fall River County, near the southwestern corner of South Dakota as shown in Figures 2-1 and 2-2. The disposal site is in sections 8 and 17 of Township 9 South, Range 3 East of the Black Hills Principal Meridian.

Southwestern South Dakota climate is characterized by low precipitation, high evaporation rates, abundant sunshine, low relative humidities, and moderate temperatures of extensive diurnal and annual variations (NRC 1982). The general climate of the area is semiarid and the winter season is dry. The average annual precipitation is 14 inches. The highest monthly precipitation usually occurs during May, June, and July.

The disposal site is located about 2 miles southeast of the confluence of Cottonwood Creek and the Cheyenne River. The site is at the head of an ephemeral drainage with site elevations ranging from about 3,680 feet at the western boundary to about 3,595 feet at the southeastern boundary. The disposal site and immediate vicinity is characterized by northwest-southeast-trending ridges and valleys (NRC 1982).

The primary land use in the immediate surrounding vicinity is livestock grazing.

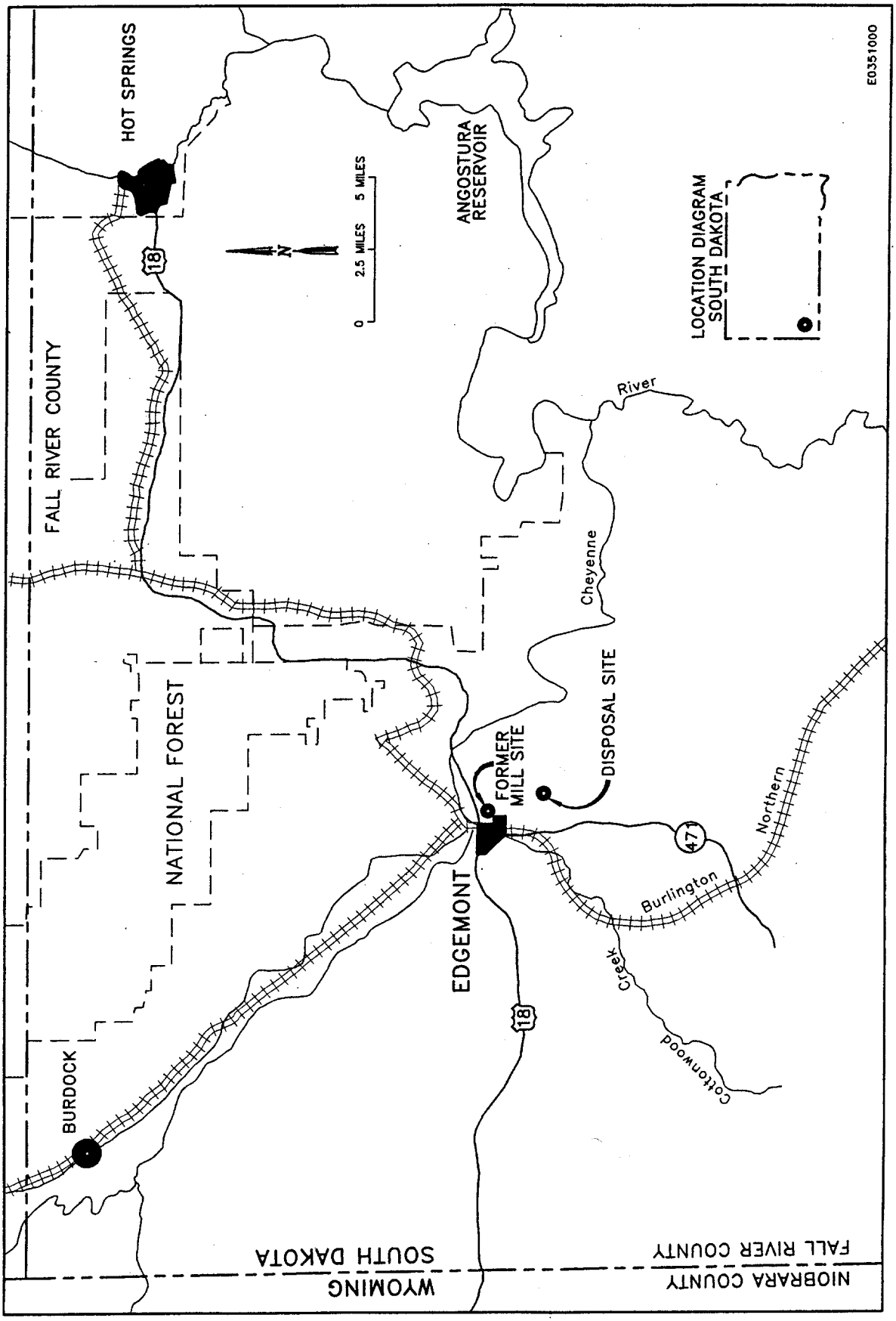

Figure 2-1. Location of Edgemont, South Dakota, Site

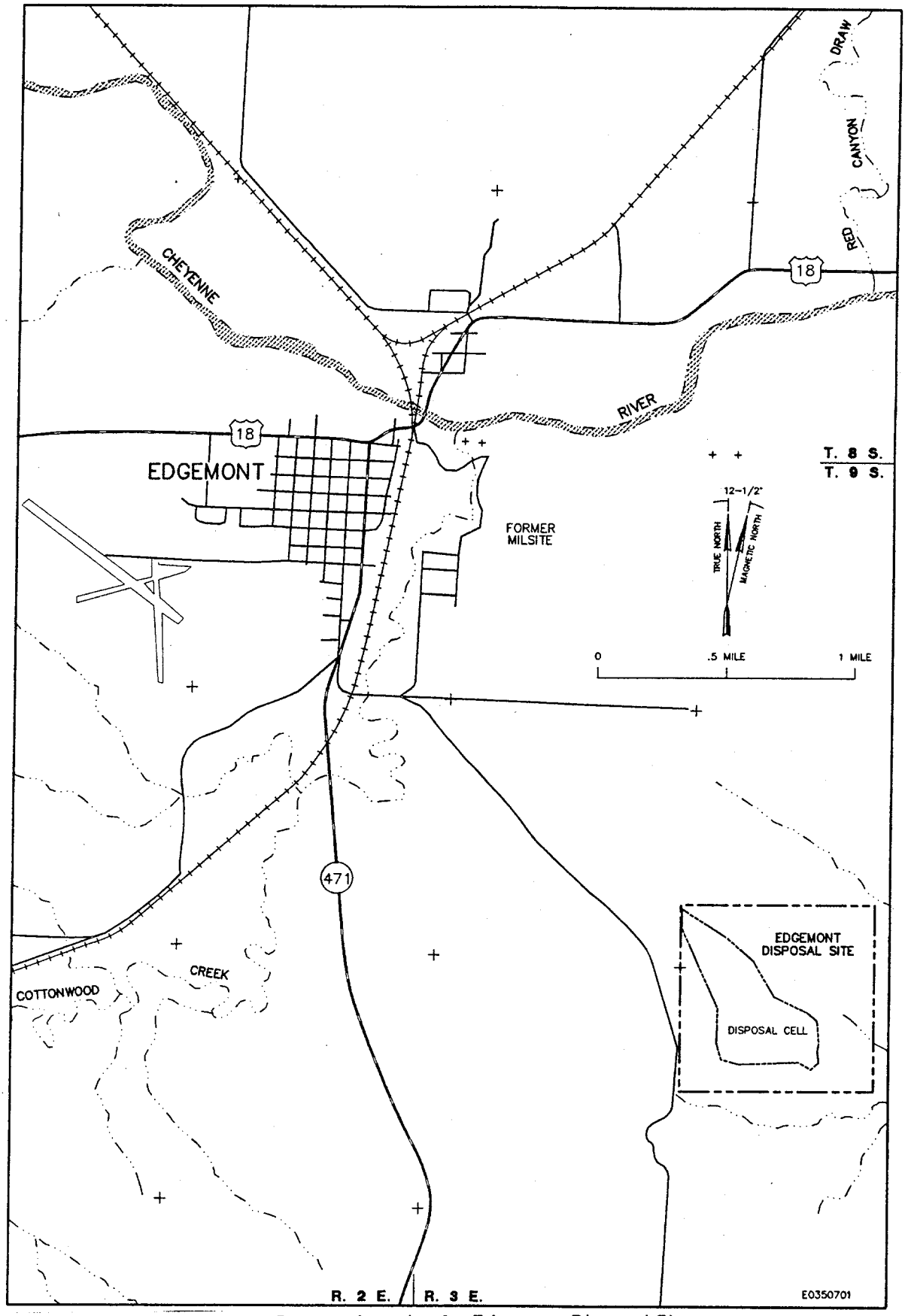

Figure 2–2. Property Location for Edgemont Disposal Site

2.3 Disposal Site Description

2.3.1 Site Ownership and Legal Description

The Edgemont, South Dakota, disposal site property is owned by the United States Government. The legal description of the 360-acre site is:

Tract No. XEDGB-11

> A parcel of land lying in Fall Fall River County, South Dakota, Township Nine (9) south, Range Three (3) East of the Black Hills Principal Meridian, on the right side of the Cheyenne River, approximately 2 miles southeast of the City of Edgemont, and being more particularly described as follows:
>
> Section Eight (8)
>
> The South One-Half of the Southwest Quarter (S½ SW¼) and the Southwest Quarter of the Southeast Quarter (SW¼ SE¼); and
>
> Section Seventeen (17)
>
> The West One-Half of the Northeast Quarter (W½ NE¼); and the Northwest Quarter (NW¼)
>
> and containing a total of 360 acres, more or less.

The agreement of transfer conveying the property rights from TVA to DOE along with an explicit description of the property aquisition, can be found in Appendix D.

All real-estate correspondence and instruments are maintained and filed by the Property Management Branch, Albuquerque Operations Office.

2.3.2 Directions to the Disposal Site

Edgemont, South Dakota is accessed from U. S. Highway 18 in southwestern South Dakota. Turn south off of Highway 18 onto state highway 471. Proceed approximately 1 mile through the Town of Edgemont to the junction with County Road 6E. Turn left on the county road, cross the railroad tracks and proceed approximately 0.2 mile. Then turn right on County Road 6N and proceed around the Edgemont golf course heading generally south and southeast for approximately 1.7 miles to the disposal site entrance, situated on the east (left) side of the county road.

2.3.3 Description of Surface Conditions

The surface has been revegetated with native grass species. The disposal basin is fenced with a 4-foot high barbed wire fence. The final site grading has all areas contoured to direct surface drainage away from the disposal cell. The 99.56-acre disposal basin is roughly centered within the 360-acre property to be retained and institutionally controlled by the DOE.

2.3.4 Permanent Site Surveillance Features

Boundary monuments, a site marker, fencing, and at least one warning sign will be the permanent long-term surveillance features at the Edgemont disposal site. These features will be inspected and maintained as necessary as part of the passive institutional controls for the site.

Four boundary monuments will be placed on the final site boundary, one at each corner of the 360-acre disposal site property.

One unpolished granite marker with an incised message identifying the Edgemont disposal site will be placed on site property just inside the official site entrance (Figure 2–3).

The disposal basin and the site property boundary are both fenced with a 4-foot high barbed wire stock fence.

One warning sign displaying the DOE 24-hour telephone number (Figure 2–4) will also be placed just inside the official site entrance.

2.3.5 Site Geology

The disposal site is located at the head of an ephemeral drainage, a tributary to the Cheyenne River. Local relief is less than 60 feet, and the site has low erosion potential (NRC 1982).

A typical stratigraphic column is shown in Figure 2-5. The disposal site area is underlain by as much as 30 feet of eolian sandy silt and silty sand along the ridge forming the eastern perimeter of the existing basin, and as much as 30 feet of alluvial silty clay across much of the floor and the western perimeter of the basin. These overburden deposits are underlain by shale bedrock of the Lower Greenhorn Formation (MacLaren 1983).

The base of the disposal cell lies in the Belle Fourche shale formation which has a thickness of 185 feet adjacent to the site. Underlying the Belle Fourche shale is the 145-foot thick Mowry shale.

Below the Mowry shale lies the 7-foot thick Newcastle sandstone. This formation is relatively permeable, but is not considered an aquifer in this area because of its lenticular nature and limited areal extent (NRC 1982).

The 215-foot thick Skull Creek shale unit underlies the Newcastle formation.

The Inyan Kara group lies beneath the Skull Creek shale and includes the Fall River and Lakota formations. The Fall River formation is the largest producing bedrock aquifer in Fall River County. The Fall River and Lakota formations are not expected to be affected by the disposal cell because of the confining nature of the overlying shale units (NRC 1982).

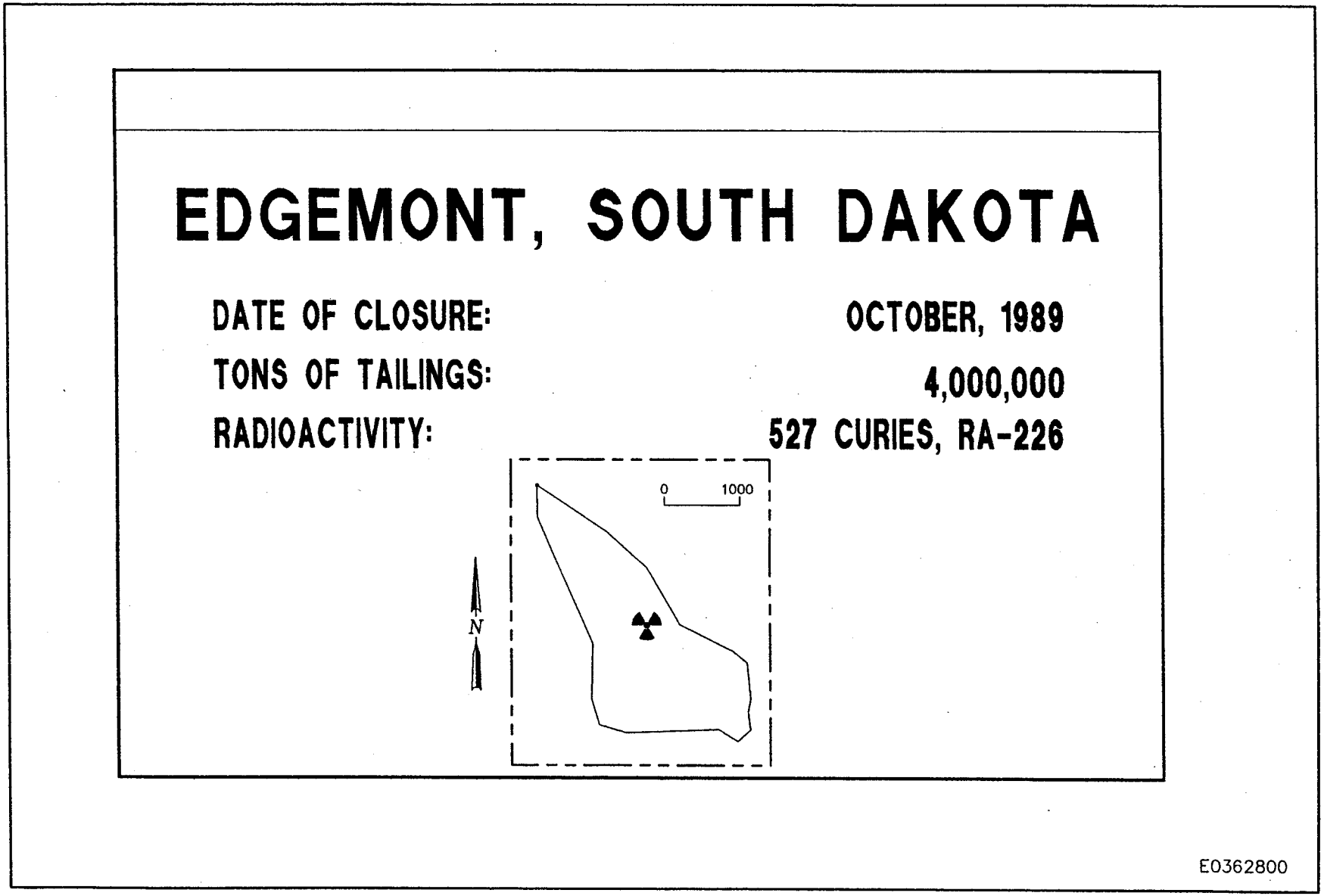

Figure 2–3. Site Marker Incised Message at Edgemont, South Dakota, Site

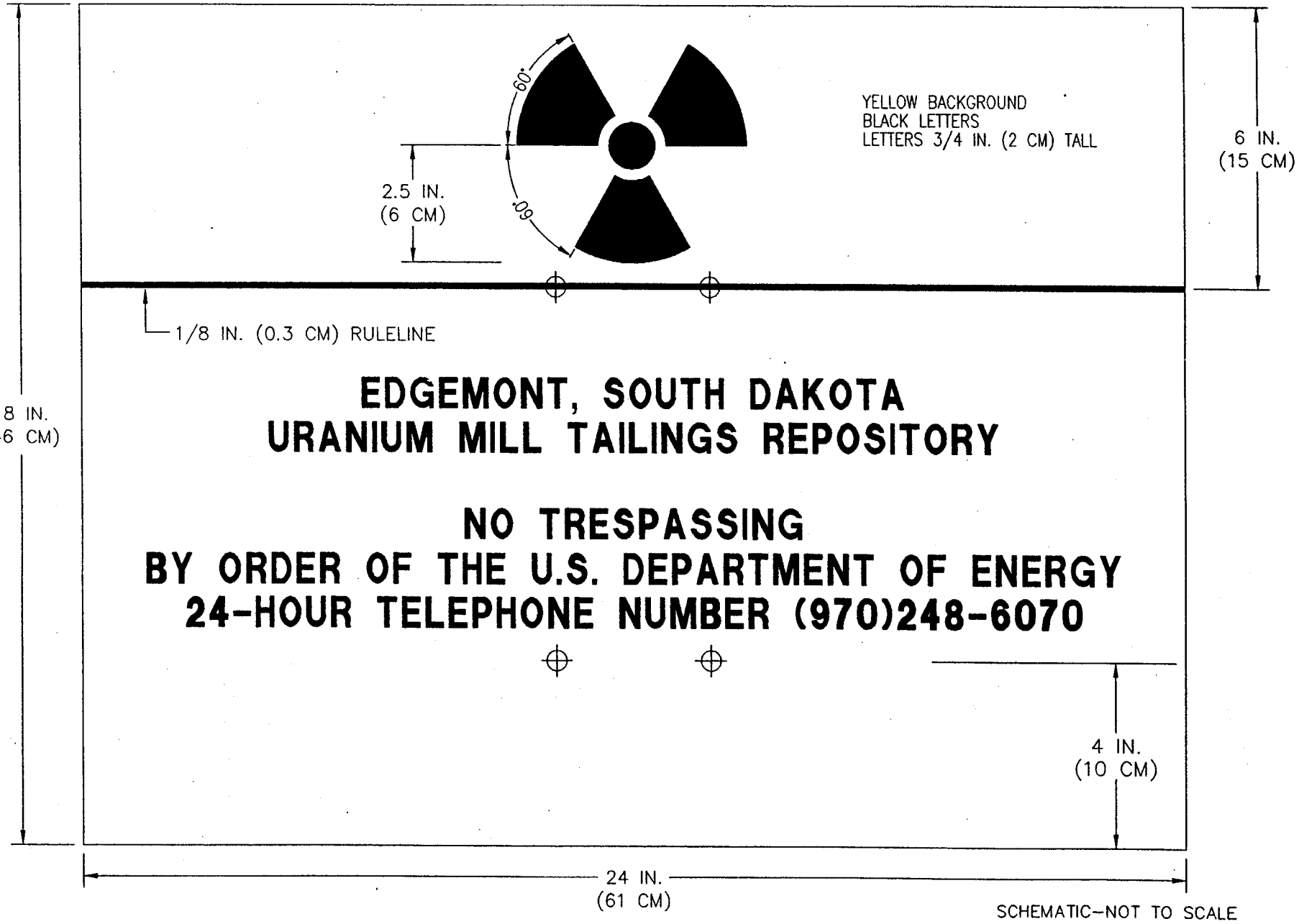

Figure 2–4 Warning Sign at Edgemont, South Dakota, Site

E0350900

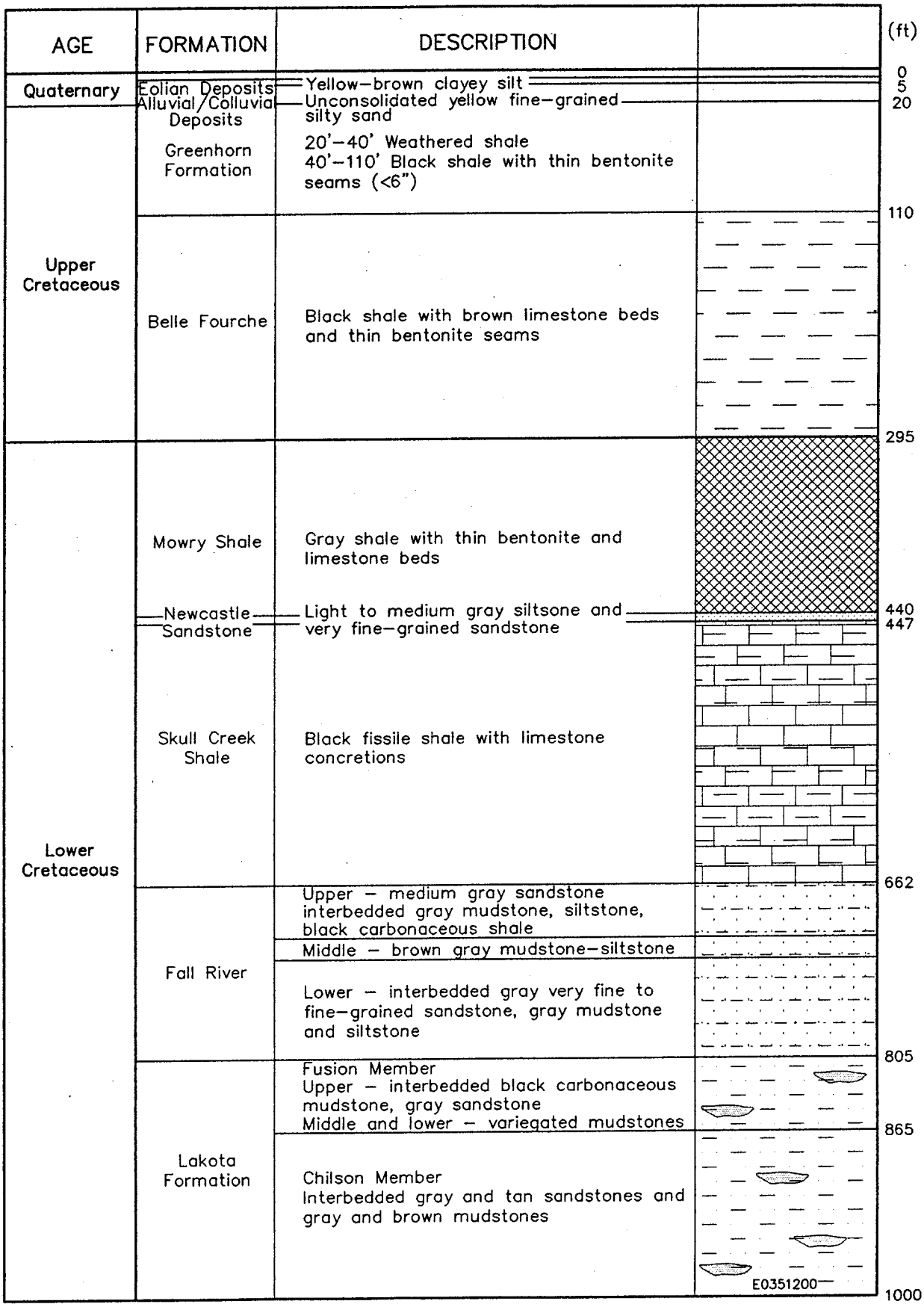

Figure 2–5. Typical Stratigraphic Column for Edgemont Disposal Site

2.4 Disposal Cell Design

The Final Environmental Statement (FES) (NRC 1982) required that the contaminated materials removed from the mill site be permanently disposed of in an engineered facility. The design approach endorsed by the FES was a "partially below-grade" disposal and "encapsulation" of the wastes. The location of the disposal site at the head of an ephemeral drainage required construction of a containment dam at the downgradient face of the disposal basin to enclose the disposal basin.

The disposal basin encompasses 99.56 acres and is underlain by competent unweathered shale ranging in depth from 300 to 700 feet. The basin walls were constructed with a compacted clay liner with an average thickness of 13 feet. The upstream core of the containment dam was constructed with a compacted liner, 70-feet-thick at the center of the basin. The basin is capped with 1 foot of topsoil material, a 5-foot layer of radiologically clean compacted fill, and 3 feet of compacted clay.

2.4.1 Containment Dam Design

The key elements of the dam included the following:

- An upstream "core" zone of highly compacted, low-permeability silty clay to minimize seepage.
- A downstream shell of compacted weathered shale for stability.
- An inclined, continuous chimney drain to intercept any seepage that might occur through the core zone.
- A series of horizontal finger drains extending from the chimney drain to the downstream toe of the dam.
- A toe collector drain.
- Riprap facing on the downstream slope for erosion protection.
- A cutoff trench to allow extending the clay core zone down into the impervious shale.
- A series of gravity relief wells designed to relieve any potential artesian pressures that may develop under the downstream portion of the dam.

2.4.2 Encapsulation Design

Encapsulation of the wastes was accomplished with a compacted clay perimeter liner keyed into the competent shale beneath the site and extended up the sides of the disposal cell. The liner was designed to provide physical separation of the wastes from the surrounding strata and any perched water zones that may exist. The containment dam was also clay-lined to enclose the downstream end of the disposal cell.

A clay cap and cover tied to the perimeter liner was placed over the wastes to control surface infiltration into the tailings. The cover consists of 3 feet of compacted clay, 5 feet of clean, compacted fill, and 1 foot of topsoil material, for a total cover thickness of 9 feet. The cover

was then revegetated with native grass species. A typical disposal cell cross-section is shown in Figure 2–6.

The disposal basin is underlain by unweathered shale ranging in depth from 300 to 700 feet. The permeability of this material was found to be $1x10^{-7}$ cm/sec or less. Consequently the NRC granted an exemption from the requirement to construct a liner for the bottom of the disposal basin.

2.4.3 Perimeter Drainage Design

The perimeter drainage system consists of ditches along the perimeter of the disposal site to intercept overland flow and convey storm water around and away from the area. The ditches were designed with a maximum gradient of 0.5 percent and sufficient hydraulic capacity to convey the flow from the probable maximum precipitation (PMP) event. The channels are designed for non-erosive flow velocities during the design storm.

The perimeter drainage systems discharge into the natural drainage systems to the northwest, southeast, and southwest of the disposal site. The design of riprap protection of the channel outlets was based on the PMP event with a return period in the 1:10,000 to 1:30,000 year range (TVA 1990).

2.5 Ground-Water Protection

The Edgemont disposal site is situated over a 300- to 700-foot-thick competent bedrock layer. The closest confined aquifer to the site lies below this bedrock layer. Additionally, constructed clay liners isolate the tailings from the unconfined perched water found nearer to the ground surface. These perched water zones are the result of precipitation infiltration. There is no evidence of direct hydraulic connection between the perched water and the confined bedrock aquifers that underlie the site (MacLaren 1983). Consequently, there is no ground-water monitoring system at the Edgemont disposal site and ground-water monitoring will not be part of the long-term surveillance requirements for this site.

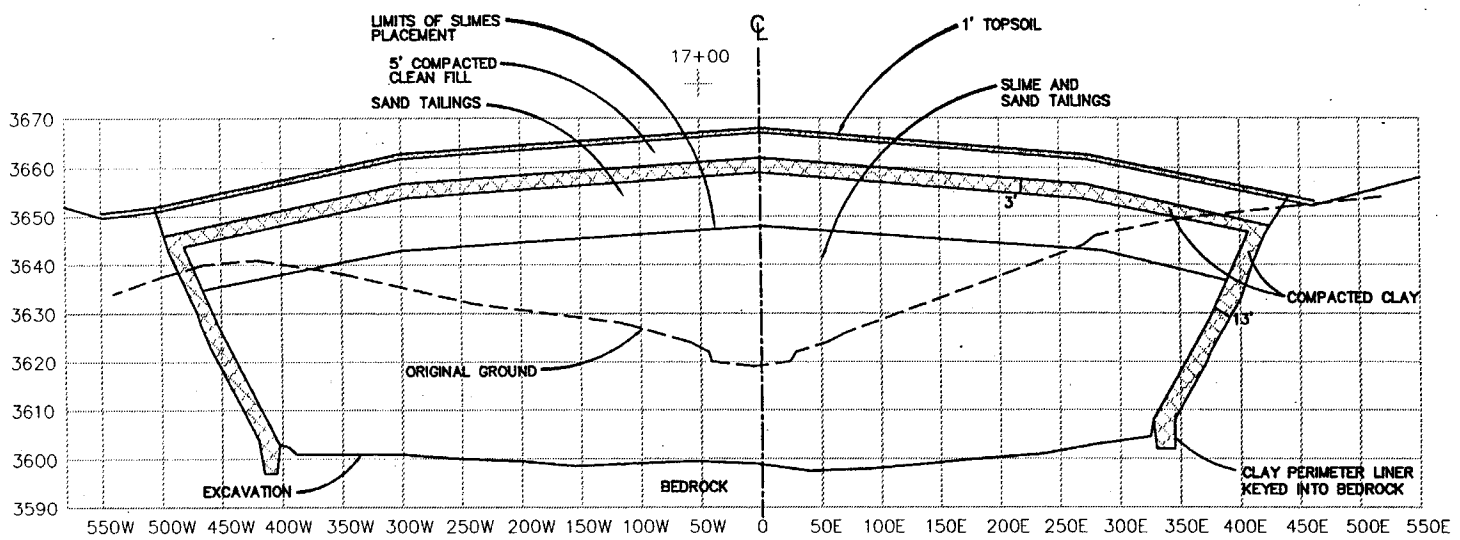

Figure 2–6. Typical Disposal Cell Cross–Section

3.0 Long-Term Surveillance Program

3.1 General License for Long-Term Custody

States have right of first refusal for long-term custody of Title II disposal sites [UMTRCA, Section 202 (a)]. If the State declines this right, the site will be transferred to the DOE (or other Federal agency, as determined by the President) for long-term custody. On March 13, 1996, the State of South Dakota, through a letter issued by the Governor, declined the custody of the TVA Edgemont site (State of South Dakota 1996).

When the NRC accepts this LTSP and terminates TVA's source material license, SUA-816, the site will be included under the NRC's general license for long-term custody [10 CFR 40.28 (b)]. Concurrent with this action, custody of, and all other rights, title, or interest to the site will be transferred from TVA to the DOE.

Although sites are designed to last "for up to 1,000 years, to the extent reasonably achievable, and, in any case, for at least 200 years [40 CFR 192, Subpart A, §192.02 (a)]," there is no termination of the general license for the DOE's long-term custody of the site [10 CFR 40.28 (b)]. The NRC recently granted finality to the reviews of eight previously approved reclamation plans, one of which was the TVA Edgemont Plan (NRC 1995). These eight disposal site plans were approved prior to the 1989 issuance of NRC guidance for erosion protection (NRC 1990).

Should changes to this LTSP be necessary, the Commission must be notified of the changes, and the changes may not conflict with the requirements of the general license. Additionally, the NRC must be guaranteed permanent right-of-entry for the purpose of periodic site inspections.

3.2 Requirements of the General License

To meet the requirements of the NRC's license at 10 CFR 40, Section 28 and Appendix A Criterion 12, the long-term custodian must, as a minimum, fulfill the following requirements. The section in the LTSP in which each requirement is addressed is given in parentheses.

1. Annual site inspection. (Section 3.3)
2. Annual inspection report. (Section 3.4)
3. Follow-up inspections and inspection reports, as necessary. (Section 3.5)
4. Site maintenance, as necessary. (Section 3.6)
5. Emergency measures in the event of catastrophe. (Section 3.6)
6. [Environmental] monitoring, if required. (Section 3.7)

3.3 Annual Site Inspections

3.3.1 Frequency of Inspections.

At a minimum, sites must be inspected annually to confirm site integrity and to determine the need, if any, for maintenance or monitoring [10 CFR 40, Appendix A, Criterion 12].

To meet this requirement, the DOE will inspect the Edgemont site once each calendar year. The date of the inspection may vary from year to year, but the DOE will endeavor to inspect the site approximately once every 12 months unless circumstances warrant variance. The variance will be explained in the inspection report. The DOE will notify the NRC and the State of South Dakota of the inspection at least 30 days in advance of the scheduled inspection date.

3.3.2 Inspection Procedure

For the purposes of inspection, the Edgemont site will be divided into sections, called *transects*. Each transect will be individually inspected. Proposed transects for the first inspection of the Edgemont site are listed in Table 3-1 and shown in Figure 3-1.

Table 3-1. Transects Used During First Inspection of Edgemont, South Dakota Site

Transect	Description
Site Perimeter, Outlying Areas, and Balance of Site	Site boundary and outlying areas up to 0.25 mile beyond the property line. Includes the property fence, site entrance gate, boundary monuments, entrance sign, and site marker.
Cover of Disposal Basin	Tailings impoundment cover.
Containment Dam and Diversion Channels	Riprap placement and integrity.

Annual inspections will be a visual walk through along a 200-foot-wide parallel grid. The primary purpose of the inspection will be for evidence of cover cracking, wind or water erosion, structural discontinuity of the containment dam, maintenance of vegetation, and animal or human intrusions that could result in adverse impacts. The entire perimeter fence will also be inspected for integrity and deterioration.

In addition to inspection of the site itself, inspectors will note changes and developments in the area surrounding the site, especially changes within 0.25 mile of the site perimeter. Significant changes within this area could include development or expansion of human habitation, erosion, road building, or other change in land use.

It may be necessary to document certain observations with photographs. Such observations may be evidence of vandalism or a slow modifying process, such as rill erosion, that should be

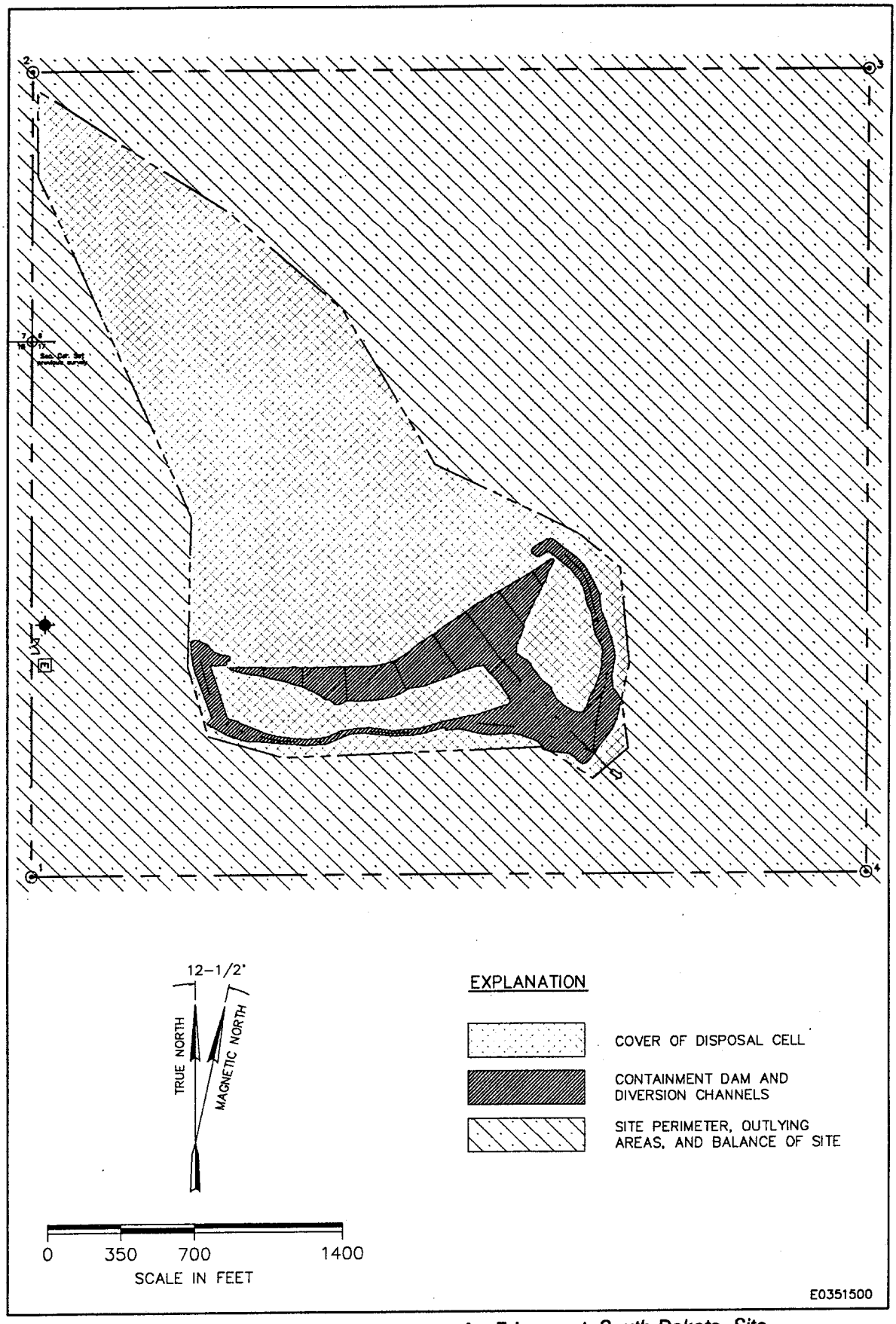

Figure 3–1. Map of Inspection Transects for Edgemont, South Dakota, Site

monitored more closely than general site conditions. A sample Field Photograph Log is included in Appendix A.

3.3.3 Inspection Checklist

The inspection is guided by the inspection checklist. The initial site-specific inspection checklist for the Edgemont site is in Appendix B.

The inspection checklist includes discussion on the preparation for the inspection, health and safety concerns, and the performance of the inspection itself.

The checklist is subject to revision. At the conclusion of an annual site inspection, inspectors will revise the checklist, if necessary, in anticipation of the next annual site inspection. Revisions to the checklist will include such items as new discoveries or changes in site conditions that must be inspected and evaluated during the next annual inspection. Other revisions will include updating of telephone numbers and directions to local medical facilities as part of the health and safety precautions noted in the checklist.

3.3.4 Personnel

Annual inspections will normally be performed by a minimum of two inspectors. Inspectors will be experienced engineers and scientists who have been specifically trained for the purpose through participation in previous site inspections.

Engineers will typically be civil, geotechnical, or geological engineers. Scientists will include geologists, hydrologists, biologists, and environmental scientists representing various fields (e.g., ecology, soils, range management). If serious or unique problems develop at the site, more than two inspectors may be assigned to the inspection. Inspectors specialized in specific fields may be assigned to the inspection to evaluate serious or unusual problems and make recommendations.

3.4 Annual Inspection Reports

Results of annual site inspections will be reported to the NRC within 90 days of the last site inspection of that calendar year [10 CFR 40, Appendix A, Criterion 12]. In the event that the annual report cannot be submitted within 90 days, the DOE will notify the NRC of the circumstances.

3.5 Follow-up Inspections

Follow-up inspections are unscheduled inspections that may be required (1) as a result of discoveries made during a previous annual site inspection, or (2) as a result of changed site conditions reported by a citizen or outside agency.

3.5.1 Criteria

Criteria necessitating follow-up inspections are required by 10 CFR 40.28 (b)(4). The DOE will conduct follow-up inspections should the following occur.

1. A condition is identified during the annual site inspection, or other site visit that requires personnel, perhaps personnel with specific expertise, to return to the site to evaluate the condition.

2. The DOE is notified by a citizen or outside agency that conditions at the site are substantially changed.

Once a condition or concern is identified at the site, the DOE will evaluate the information, and, on the basis of this evaluation, will decide whether or not to respond with a follow-up inspection. Conditions that may require a routine follow-up inspection include changes in vegetation, slope stability, new or increased erosion, evidence of casual or low-impact human intrusion, minor vandalism, or the need to revisit the site to evaluate, define, or perform maintenance tasks. Conditions that may require a more immediate (nonroutine) follow-up inspection include extreme weather or seismic events and disclosure of deliberate human intrusion that threaten the integrity of the disposal cell.

The DOE will act responsibly and exercise flexibility by using a graded approach in scheduling routine follow-up inspections. Urgency of the follow-up inspection will be in proportion to the seriousness of the condition. For example, a follow-up inspection to investigate a vegetation problem may be scheduled for a particular time of year when growing conditions are optimum. A routine follow-up inspection to perform maintenance or to evaluate an erosion problem might be scheduled to avoid snow cover or frozen ground.

In the event of "unusual damage or disruption" (10 CFR 40, Appendix A, Criterion 12) that threatens or compromises site safety, security, or integrity, including the unlikelihood of an actual breach in cover materials, the DOE will notify the NRC, begin the DOE occurrence notification process (DOE Order 232.1), respond with an immediate follow-up inspection, and begin emergency measures (Section 3.6) to contain or prevent dispersion of radioactive materials from the disposal cell. At any time, the DOE may request the assistance of local authorities to confirm the seriousness of a condition at the site before scheduling a follow-up inspection or initiating other appropriate action.

The DOE will establish liaison with other government agencies for notification in the event of human intrusion or unusual-to-catastrophic natural events in the vicinity of the site. Agencies to be notified will include the Fall River County Sheriff's Department; the U.S. Geological Survey National Earthquake Information Center in Denver, Colorado; and the South Dakota State Office of the National Weather Service in Rapid City. These agencies will contact the DOE, or provide information upon request, should an event occur that might affect the security or integrity of the Edgemont site.

In addition, the warning sign to be installed at the site entrance will display a 24-hour DOE telephone number. The public may use this number to request information about the site or to advise the DOE of problems at the site. The DOE may conduct follow-up inspections in response to information provided by the public.

3.5.2 Personnel

Inspectors assigned to follow-up inspections will be selected on the same basis as for the annual site inspection. (See Section 3.3.4.)

3.5.3 Reports of Follow-up Inspections

Results of routine follow-up inspections will be included in the next annual inspection report (Section 3.4). Separate reports will not be prepared unless the DOE determines that it is advisable to notify the NRC or other outside agency of a problem at the site.

If follow-up inspections are required for more serious or emergency reasons, the DOE will submit to the NRC a preliminary report of the follow-up inspection within the required 60 days (10 CFR 40, Appendix A, Criterion 12).

3.6 Routine Site Maintenance and Emergency Measures

3.6.1 Routine Site Maintenance

UMTRCA disposal sites are designed and constructed so that "ongoing active maintenance is not necessary to preserve isolation" of radioactive material (10 CFR 40, Appendix A, Criterion 12). The disposal basin has been designed and constructed to negate the need for routine maintenance. The site has been revegetated with self-sustaining native grass species. After vegetation has been established, no remedial vegetation activities are anticipated. The cover of the disposal basin was constructed with slopes from 2 percent near the basin crown to a maximum of 5 percent leading to the perimeter diversion ditches. Because of the vegetation and slopes, there should be no long-term adverse wind or water erosion impacts that will require maintenance. The disposal basin has been fenced with a 4-foot high, 3-strand barbed wire fence to prevent livestock grazing. It is anticipated that there may be some wildlife utilization of the site but no adverse impacts are expected. Fence repair and maintenance will be performed as necessary to maintain the integrity of the fence. If any inspection of the disposal basin reveals failure of the as-built condition, then repairs will be conducted to reestablish the as-built condition. The DOE will perform routine site maintenance, where and when needed, based on best management practices. Reports of routine site maintenance will be summarized in the annual site inspection report.

3.6.2 Emergency Measures

Emergency measures are the actions that the DOE will take in response to "unusual damage or disruption" that threaten or compromise site safety, security, or integrity. The DOE will contain or prevent dispersal of radioactive materials in the unlikely event of a breach in cover materials.

3.6.3 Criteria for Routine Site Maintenance and Emergency Measures

Conceptually, there is a continuum in the progression from annual minor routine maintenance to large-scale reconstruction of the disposal cell following a disaster. Criteria, although required by 10 CFR 40.28 (b)(5), for triggering particular DOE responses for each progressively more serious level of intervention are not easily defined because the nature and scale of all potential problems can not be foreseen. The information in Table 3–2 will, however, serve as a guide for appropriate DOE responses. The table shows that the difference between routine maintenance and emergency

responses is primarily one of urgency and degree of threat or risk. The DOE's priority (urgency) in column 1 of Table 3–2 bears an inverse relationship with the DOE's estimate of probability. The highest priority response is also believed to be the least likely to occur.

3.6.4 Reporting Maintenance and Emergency Measures

Routine maintenance completed during the previous 12 months will be summarized in the annual inspection report.

Table 3–2. DOE Criteria for Maintenance and Emergency Measures[a]

Priority	Description	Example	Response
1	Breach of disposal cell with dispersal of radioactive material.	Failure of containment dam.	Notify NRC. Immediate follow-up inspection by DOE emergency response team. Emergency actions to prevent further dispersal, recover radioactive materials, and repair breach.
2	Breach without dispersal of radioactive material.	Partial or threatened exposure of radioactive materials.	Notify NRC. Immediate follow-up inspection by DOE emergency response team. Emergency actions to repair the breach.
3	Breach of site security.	Human intrusion, vandalism.	Restore security; urgency based on assessment of risk.
4	Maintenance of specific site surveillance features.	Deterioration of fencing.	Repair at first opportunity.
5	Minor erosion or undesirable changes in vegetation.	Erosion not immediately affecting disposal cell, invasion of undesirable plant species.	Evaluate, assess impact, respond as appropriate to eliminate problem.

[a]Other changes or conditions will be evaluated and treated similarly on the basis of perceived risk.

In accordance with 10 CFR 40.60, the DOE will notify

Uranium Recovery Branch
Division of Waste Management
Office of Nuclear Material Safety and Safeguards
U.S. Nuclear Regulatory Commission

within 4 hours of discovery of any Priority 1 or 2 event in Table 3–2. The phone number for the required 4-hour contact to the NRC Operations Center is in the Inspection Checklist (Appendix B).

3.7 Environmental Monitoring

3.7.1 Ground-Water Monitoring

The disposal basin was constructed with a compacted clay perimeter liner that averages 13 feet in thickness along the sides and basin face of the containment dam. The bottom of the basin is underlain by 300 to 700 feet of competent shale. The cover consists of a 3-foot-thick compacted clay cap and 5 feet of compacted fill. The contaminated material is thus encapsulated by material with a permeability of 1 x 10^{-7} cm/s or less and no ground-water monitoring system is necessary.

3.7.2 Vegetation Monitoring

The disposal basin was revegetated in the fall of 1989. The disposal basin vegetation density currently equals or exceeds native perennial species. Annual visual inspections will be performed by walking along a 200-foot-wide parallel grid. Should reseeding become necessary, the seed mix is specified in Table 2.5 of the FES (NRC 1982).

3.8 Records

The LTSM Program maintains site records in a permanent site file at the GJPO. These records are available for inspection by Government agencies or the public. Records consist of disposal site characterization, design, and construction documents. Annual inspection results are also part of the permanent site file.

All LTSM Program records are maintained in full compliance with DOE requirements:

1. DOE Order 1324.2A, Records Disposition
2. DOE Order 1324.5, Records Management Program
3. DOE Order 1324.8, Rights and Interests Records Protection Program
4. DOE Order 5500.7B, Emergency Operating Records

3.9 Quality Assurance

The long-term custody of the Edgemont site and all activities related to the annual surveillance and maintenance of the site will comply with DOE Order 5700.6C, Quality Assurance (QA) and the draft *Specifications and Guidelines for Quality Systems for Environmental Data Collection and Environmental Technology Programs* (American Society for Quality Control 1994).

QA requirements will be transmitted through procurement documents to subcontractors if/when appropriate.

3.10 Health and Safety

Health and safety procedures for LTSM Program activities are consistent with DOE orders, regulations, codes, and standards.

Immediate health and safety concerns are listed in the Inspection Checklist (Section 3.3.3 and Appendix B). Also in the Health and Safety section of the Inspection Checklist are 24-hour emergency phone numbers for fire, hospital and ambulance, and police and sheriff; directions from the site to the nearest medical facility with an emergency room are also in the checklist. The checklist is updated before each inspection to advise on-site personnel of new and continuing health and safety considerations. A Job Safety Analysis is completed before each inspection. At a pre-inspection briefing, on-site personnel review the Job Safety Analysis and are instructed on hazards that may be present at the site and health and safety procedures that must be followed.

Subcontractors (for maintenance) are advised of health and safety requirements through appropriate procurement documents. Subcontractors must submit health and safety plans for all actions subject to Occupational Safety and Health Administration (OSHA) requirements. Subcontractor health and safety plans will be reviewed and approved before the contract in awarded. Proposals from subcontractors without an adequate health and safety plan are rejected.

4.0 References

American Society for Quality Control (ASQC), 1994. *Specifications and Guidelines for Quality Systems for Environmental Data Collection and Environmental Technology Programs,* draft, ANSI/ASQC E4-19XX, Energy and Environmental Quality Division, Environmental Issues Group, January 1994.

DOE (U. S. Department of Energy), 1995. *Occurrence Reporting and Processing of Operations Information,* DOE Order 232.1, October 30, 1995.

FBD (Ford, Bacon, and Davis Utah Inc.), 1978. *Engineering Assessment of Inactive Uranium Mill Tailings, Edgemont Site, Edgemont South Dakota,* May 1978. Prepared for U. S. Nuclear Regulatory Commission, Washington, D.C.

MacLaren (MacLaren Engineers), 1983. *Results of Geotechnical Investigation, Proposed Disposal Site,* January 1983. Report to Silver King Mines Inc., TVA Project, Edgemont Mill Decommissioning, Report No. 7.

NRC (U. S. Nuclear Regulatory Commission), 1982. *Final Environmental Statement related to the decommissioning of the Edgemont Uranium Mill,* June 1982. NUREG-0846, Office of Nuclear Material Safety and Safeguards.

_____,1990. Final Staff Technical Position, *Design of Erosion Protection Covers for Stabilization of Uranium Mill Tailings Sites.*

_____, 1995. Memorandum to James M. Taylor, Executive Director for Operations, from John C. Hoyle, Secretary for the Commissioners, Regarding SECY-95-155, Review of Previously Approved Reclamation Plans, June 29, 1995.

State of South Dakota, 1996. Letter to Mr. Joe Virgona from William J. Janklow, Governor of the State of South Dakota, declining custody of the Edgemont Title II disposal site, March 13, 1996.

TVA, 1990. *Edgemont Mill Decommissioning Project, NRC Source Material License SUA-816, Decontamination and Decommissioning,* Final Report, Tennessee Valley Authority, March 1990.

Appendix A
Field Photograph Log

FIELD PHOTOGRAPH LOG

Site: _____ Roll No. __ (of __) Page 1

Date: _____ Time of Day: Fm _____ To _____

Weather Conditions: _____

Film Data: Size ____ ISO ____ Exposures ____

Frame[a]	Azimuth[b]	PL No.[c]	Subject/Description
0			
1			
2			
3			
4			
5			
6			
7			
8			
9			
10			
11			
12			
13			
14			
15			
16			
17			

Inspector: _____ _____

Signature Printed Name

[a]Adjusted to match frame number on negative.

[b]Declination angle: _____

[c]Photograph location number. Assigned when inspection report is written. See inspection report, Plate 1, for map of photograph locations.

FIELD PHOTOGRAPH LOG

Site: _____ Roll No. __ (of __)

Date: _____ Time of Day: Fm _____ To _____

Weather Conditions: _____

Film Data: Size ____ ISO ____ Exposures ____

Frame[a]	Azimuth[b]	PL No.[c]	Subject/Description
0			
1			
2			
3			
4			
5			
6			
7			
8			
9			
10			
11			
12			
13			
14			
15			
16			
17			

Inspector: _____ _____

Signature Printed Name

[a]Adjusted to match frame number on negative.

[b]Declination angle: _____

[c]Photograph location number. Assigned when inspection report is written. See inspection report, Plate 1, for map of photograph locations.

Appendix B
Initial Site Inspection Checklist

Inspection Checklist
Annual Site Inspection

Site: Edgemont, South Dakota, Title II Disposal Site

Date Prepared:

Date of Inspection:

Type of Inspection: First Annual Inspection

I. General Instructions

A. This inspection checklist is site specific. It incorporates general and site-specific requirements for annual inspections of the subject site.

This checklist may be revised in response to new requirements, as dictated by results of previous inspections and maintenance requirements, or as new information about the site is received.

B. The purpose of the checklist is to support

- Planning for the inspection
- Inspection of the site
- Evaluation of the thoroughness of the inspection before the inspection party leaves the site at the conclusion of the inspection
- Preparation of the inspection report

C. This checklist is provided for the convenience of those planning and conducting the inspection. Other information, materials, or guidance may be used in place of or in addition to the checklist if site conditions or institutional requirements require.

II. Preparation for the Inspection

A. Review inspection guidance documents:

- *Long-Term Surveillance Plan for the DOE Edgemont (UMTRCA Title II) Disposal Site Edgemont, South Dakota.*

B. Review previous inspection reports, field notes from previous inspections, maps and drawings of the site, and other documents as necessary to become familiar with site history, current conditions at the site, and the results of recent inspections and maintenance. Obtain copies of maps, plans, and other documents required for the inspection:

- Long-Term Surveillance Plan (LTSP)
- Pertinent documents from the Site File, such as the Site Completion Report submitted by Tennessee Valley Authority (TVA)

Review site access procedures and protocols.

Notify affected agencies. Complete actions required to enter the site.

Obtain key for lock on gates from

- DOE–Grand Junction Projects Office Mr. J. Virgona 970-248-6006

C. Review specific observations to be made and problems to be studied or resolved during the coming inspection. (See Subsection E of this Section.)

D. Assemble and pack field equipment required for the inspection of the Edgemont site:

- Camera
- Spare batteries
- Camera accessories
- Film, two rolls of 36-exposure (or equivalent) color print film
- Photograph scale/north arrow
- Brunton compass
- 50-foot tape
- 10- to 20-foot tape
- Gate keys
- Covered clipboard
- Canteens or other provision for water in hot weather
- Sun protection
- Field photograph forms

- Hand-held level
- Orange field notebook
- Black, indelible, felt-tip marker with broad point
- Day packs or belt packs (optional but advisable for this site)
- First aid kit

E. General Surveillance

1. Specific Site-Surveillance Features

   - Entrance gate
   - Property boundary fence and access gates
   - Boundary monuments, 4
   - Warning signs around the site property boundary
   - Site marker

2. Transects

   - Site perimeter and outlying areas up to 0.25 mi outside the site property
   - Cover of disposal basin
   - Containment dam and diversion channels

   For all transects:

   - Settlement, slumping, heaving, cracking
   - Erosion
   - Windblown sand accumulation
   - Invasion by plants or animals
   - Intrusion by humans or domestic animals
   - Other

3. Area Within 0.25 mi of the site

   - Change in land use

- New construction or development
- Earth movement, erosion, or changes in nearby drainages

4. Specific Tasks and Observations
   - (These will vary depending on the condition of the site and on issues or concerns developed from previous inspections.)
5. Maintenance

III. Site Inspection

A. The checklist is not intended to be exhaustive or constraining. The inspection team is free to make other observations as its judgment and site conditions dictate.

B. Before the inspection of the site is completed and before the inspection team leaves the site, the inspection team should satisfy itself that the site has been fully inspected and evaluated and that sufficient photographs and measurements have been obtained.

C. Health and Safety

The Edgemont site is usually hot and dry in summer and cold and dry in winter. Occasional thunderstorms occur in spring and summer, and light snows occur in winter. Personnel should make provisions for the following seasonal conditions:

Summer:

- Sun protection (a hat is advised).
- Drinking water. Personal canteens recommended, 2 quarts per person.
- Rain gear.

Winter:

- Warm clothing, preferably layered.

Safety shoes are not required at this site. However, the containment dam and the diversion channels are covered with angular, unstable rock, and sturdy boots with high ankle support are recommended. Rattlesnakes inhabit the area and care should be taken to avoid surprising them.

Pertinent 24-hour emergency numbers are as follows:

- Fire:
- Hospital/Ambulance:
- Police/Sheriff:

These facilities can also be contacted by dialing 911. The nearest telephone is _____. The nearest medical facility with an emergency room is _____. Directions from the site to the medical facility are as follows:

IV. Inspection Closeout Summary

A. At the end of the inspection and before leaving the site, the inspection team should:

1. Satisfy itself that it has sufficient information (photographs, notes, measurements, sketches, etc.) to describe and evaluate findings and observations for the site inspection report.

2. Summarize, in the field notes or elsewhere, the following information:

   - Serious problems or threatening factors that require immediate attention or follow-up action;
   - Actual or potential problems not requiring immediate attention but that require further observation possibly including a follow-up inspection; and
   - Changes recommended for this checklist before the next inspection.

B. If serious problems are identified during the inspection, the inspection team should:

1. Immediately notify the DOE-GJPO Project Manager and the LTSM Project Manager.

2. Follow GJPO procedures for compliance with DOE Order 232.1 (DOE, 1995).

3. In the event of a release (excursion) of radioactive material, reporting requirements in 10 CFR§40.60 will be followed. Initially within 4 hours after discovery, the NRC Operations Center will be contacted at (301) 951-0550.

Appendix C
Agency Notification Agreements

United States Department of the Interior
GEOLOGICAL SURVEY
BOX 25046 M.S. 967
DENVER FEDERAL CENTER
DENVER, COLORADO 80225

TAKE PRIDE IN AMERICA

IN REPLY REFER TO:

Mr. Joseph E. Virgona
Project Manager
U. S. Department of Energy
Grand Junction Projects Office
P.O. Box 2567
Grand Junction, CO 81502

Dear Mr. Virgona:

This letter is to concur with the U.S. Department of Energy (DOE) request for notification as set forth in the DOE's letter of May 31, 1996. As requested in the DOE's letter, our organization will contact the Grand Junction Projects Office at (970) 248-6070 if ~~unusual activities or weather~~ earthquake activity are observed at the DOE's storage site near Edgemont, South Dakota. (43.27°N, 103.8°W)

Sincerely,

Stuart K. Koyanagi

Mr. Stuart Koyanagi
U.S. Geological Survey
National Earthquake Information Center
P.O. Box 25046
Mail Stop 967
Denver Federal Center
Denver, CO 80225

Criteria:
Notification for events released
mag. 3.0 and greater
in 42.9 - 43.6°N
103.5 - 104.1°W

mag 5.0 and greater
in 42.2 - 44.3°N
102.8 - 104.8°W

U.S. Department of Commerce
National Weather Service, NOAA
300 E. Signal Dr.
Rapid City, SD 57701-3800

June 7, 1996

Joseph E. Virgona
Department of Energy
Grand Junction Projects Office
P.O. Box 2567
Grand Junction, CO 81502-2567

Dear Mr. Virgona;

Ms. Anderson forwarded your letter to me for a response. In general, we encourage those who wish to use our products to acquire a means of receiving them via a mass news dissemination provider, the NOAA Weather Wire Service, or private weather information provider. In fact, we routinely turn down requests to provide individual telephone notification of our warnings. Therefore, it would not seem fair to provide that service to your agency, when we can't provide the same service to all others who have made the same request.

If you suspect a tornado or flash flood event may have occurred in the vicinity of the Edgemont Storage site, you are welcome to contact this office for additional details.

If you have questions about our policy, please contact me at 605-341-9271.

Sincerely

David M. Carpenter
Meteorologist in charge

Department of Energy
Grand Junction Projects Office
Post Office Box 2567
Grand Junction, Colorado 81502–2567

MAY 31 1996

Mr. Gene Linehan
Fall River County Sheriff's Department
North River Street
Hot Springs, SD 57747

SUBJECT: Notification in Case of Emergency

Dear Mr. Linehan:

On July 1, 1996, the U.S. Department of Energy (DOE) is scheduled to take custody of the former Tennessee Valley Authority (TVA) radioactive material storage site near Edgemont, South Dakota. As part of its custodial responsibilities, the DOE Grand Junction Projects Office (GJPO) is requesting notification of unusual activities or events in or around the site located about 2 miles southeast of Edgemont, South Dakota. The purpose of the notification request is to assist DOE in maintaining the safety and security of the site.

If, during the course of routine activities, anything out of the ordinary is observed by your officers or reported to your office, we would appreciate immediate notification on the DOE-GJPO's 24-hour telephone line (970) 248-6070. The enclosed map shows the location of the site.

If the notification request described above is acceptable to you, please sign and return the enclosed reply letter for our records as soon as possible.

If you have any questions, please contact me at (970) 248-6006. Thank you for your attention in this matter.

Sincerely,

Joseph E. Virgona

Joseph E. Virgona
Project Manager

Enclosures

cc w/o enclosure:
M. Plessinger, Rust Geotech

Appendix D
Agreement of Transfer and Other Title Documentation

Department of Energy
Albuquerque Operations Office
P. O. Box 5400
Albuquerque, New Mexico 87185-5400

May 10, 1996

Mr. Tom Hayslett
Manager, Nuclear Fuels Supply
Tennessee Valley Authority
1101 Market Street
BR6A
Chattanooga, Tennessee 37402-2801

Dear Mr. Hayslett:

We have reviewed the title data relating to the acquisition of land and interests therein submitted by your office covering the Northwest Quarter (NW 1/4) of Section 17, the West One-Half of the Northeast Quarter (W 1/2 NE 1/4) of Section 17, the South One-Half of the Southwest Quarter (S 1/2 SW 1/4) of Section 8, and the Southwest Quarter of the Southeast Quarter (SW 1/4 SE 1/4) of Section 8 all in Township 9 South, Range 3 East of the Black Hills Principal Meridian, Fall River County, South Dakota, containing 360 acres, more or less.

The documentation presented for review is composed of:

A. Report on Title, Tract XEDGB-11 dated April 1, 1996.

B. Final Certificate of Title, Tract EDGB-1, dated October 3, 1991.

C. Warranty Deed, Tract EDGB-1, dated June 29, 1982.

D. Final Certificate of Title, Tract EDGB-2, dated January 15, 1991.

E. Warranty Deed, Tract EDGB-2, dated March 13, 1981.

F. Final Certificate of Title, Tracts EDGB-1M and EDGB-2M, dated September 25, 1991.

G. Warranty Deed, Tracts EDGB-1M (Parcel A), and EDGB-2M (Parcel A), dated February 12, 1982

H. Grant of Permanent Easement to Mineral Estate, Tract EDGB-5, dated July 29, 1985.

The documentation discloses title to the subject property vested in the United States of America subject to outstanding mineral interests and overrides as noted on the above referenced documents.

Accordingly, and based upon our review, we are of the same opinion that the Tennessee Valley Authority (TVA) acting on behalf of the United States of America is the owner of a good and merchantable title to the above described property. Please proceed with preparation of the Transfer and Custody Agreement which will serve as the vehicle to effectuate transfer from TVA to the Department of Energy.

If we can provide any further assistance in this matter, please contact me at 505-845-5349.

Sincerely,

Pete Montoya

Pete Montoya
Realty Officer
Property Management Branch
Property and Administrative
Services Division

cc:
J. Virgona, GJPO
K. Landolt, OCC, AL

Tennessee Valley Authority, 1101 Market Street, Chattanooga, Tennessee 37402-2801

June 19, 1996

Mr. Larry Biddle
U.S. Department of Energy
Contracts Procurement Division
Kirtland Air Force Base
Pennsylvania and H Streets
Albuquerque, New Mexico 87115

Dear Mr. Biddle:

TRANSFER OF CUSTODY - TRACT NO. XEDGB-11

Enclosed are duplicate originals of an Agreement of Transfer from the Tennessee Valley Authority to the United States Department of Energy related to the Edgemont uranium mill tailings disposal site. Please sign and date both documents and return one to me in the enclosed envelope which requires no postage.

Sincerely,

Tom D. Waller
Manager
Realty Administration

Enclosures
cc: Mr. Joseph E. Virgona
Project Engineer
U.S. Department of Energy
Grand Junction Projects Office
P.O. Box 2567
Grand Junction, Colorado 81502

Department of Energy
Albuquerque Operations Office
P. O. Box 5400
Albuquerque, New Mexico 87185-5400

JUN 2 1 1996

Mr. Tom D. Waller
Manager, Realty Administration
Tennessee Valley Authority
1101 Market Street
Chattanooga, Tennessee 37402-2801

Dear Mr. Waller:

Enclosed is a signed copy of the Agreement of Transfer from the Tennessee Valley Authority to the United States Department of Energy related to the Edgemont uranium mill tailings disposal site. I have retained one for our files. Please ensure that a copy is filed with the County Clerk.

Should you have any questions, please contact me at (505) 845-4662.

Sincerely,

L. E. Biddle

L. E. Biddle
Contracting Officer
Field Management Branch
Contracts and Procurement Division

Enclosure

cc w/enclosure:
Joseph E. Virgona, GJPO
Pete Montoya, PASD

TVA Tract No. XEDGB-11

AGREEMENT OF TRANSFER
FROM
TENNESSEE VALLEY AUTHORITY
TO
UNITED STATES DEPARTMENT OF ENERGY

THIS AGREEMENT OF TRANSFER, made and entered into this 21st day of June, 1996, by and between the TENNESSEE VALLEY AUTHORITY (hereinafter referred to as "TVA"), a corporate agency and instrumentality of the United States of America (hereinafter referred to as "USA"), organized and existing under and by virtue of an act of Congress known as the Tennessee Valley Authority Act of 1933, as amended (hereinafter referred to as "TVA Act"), and UNITED STATES DEPARTMENT OF ENERGY (hereinafter referred to as "DOE");

W I T N E S S E T H:

WHEREAS TVA is authorized by the TVA Act to acquire in the name of the USA such real property as it deems necessary or convenient in the transaction of its business, which property is entrusted to TVA as the agent of the USA to accomplish the purposes of the TVA Act; and

WHEREAS in the conduct of its power generation business TVA, as agent of the USA, acquired a uranium mill and mill tailings disposal site near Edgemont, in Fall River County, South Dakota; and

WHEREAS the United States Nuclear Regulatory Commission (hereinafter referred to as "NRC") issued a license to TVA for the uranium mill site and mill tailings disposal site pursuant to the Atomic Energy Act of 1954, as amended, and NRC's implementing regulations; and

WHEREAS TVA has closed the uranium mill and desires to terminate said license and dispose of the mill tailings disposal site; and

WHEREAS, as a prerequisite to terminating said license, NRC requires that TVA transfer possession, control, and custody of said mill tailings disposal site and byproduct material located thereon to DOE; and

WHEREAS DOE is authorized by section 83(b)(2) of the Atomic Energy Act of 1954, as amended, to assume title and custody of uranium mill tailings disposal sites and byproduct material located thereon, so as to maintain such material and sites to protect the public health and safety and the environment; and

WHEREAS DOE is willing to assume possession, control, custody, and long-term care of the uranium mill tailings disposal site and byproduct material located thereon under DOE's general license for custody and long-term care of uranium byproduct disposal sites pursuant to NRC's regulations at 10 C.F.R. 40.28;

NOW, THEREFORE, in consideration of the foregoing premises and mutual covenants hereinafter contained and the payment by TVA to the general treasury of the USA in the amount of $586,610 to cover the costs of long-term surveillance and certain costs incurred by DOE in connection with this transaction (plus interest on the long-term surveillance fee from the date of TVA's license termination to the transfer of funds to the general treasury, based on the 90-day treasury bill rate at license termination), the parties hereto covenant and agree as follows:

1. TVA hereby assigns and transfers to DOE the right of possession, control, and custody of, and all other rights, title, or interest that it may have in and to the land located in Fall River County, South Dakota, designated as Tract No. XEDGB-11 and more particularly described in the description of the transfer area attached hereto and incorporated herein as Exhibit A, and shown on the map attached hereto as Exhibit B, and to all byproduct material located thereon.

2. DOE hereby accepts possession, control, and custody of the property described in said Exhibit A and shown on Exhibit B, and shall perform long-term care of such property, including monitoring, maintenance, and emergency measures necessary to protect the public health and safety and other actions necessary to comply with NRC regulations for uranium mill tailings sites.

IN WITNESS WHEREOF, the parties hereto have caused this instrument to be executed by their respective representatives thereunto duly authorized, as of the day and year first above written.

TENNESSEE VALLEY AUTHORITY

By: _____
Title: T. D. Waller, Manager
Realty Adminisstration

UNITED STATES DEPARTMENT OF ENERGY

By: L. E. Biddle
Title: Contracting Officer

OGC\29299\6-4-96

EXHIBIT A
EDGEMONT MILL TAILINGS DISPOSAL SITE
LAND SALE TRACT NO. XEDGB-11

A parcel of land lying in Fall Fall River County, South Dakota, Township Nine (9) South, Range Three (3) East of the Black Hills Principal Meridian, on the right side of the Cheyenne River, approximately 2 miles southeast of the City of Edgemont, and being more particularly described as follows:

Section Eight (8)

The South One-Half of the Southwest Quarter (S1/2SW1/4) and the Southwest Quarter of the Southeast Quarter (SW1/4SE1/4); and

Section Seventeen (17)

The West One-Half of the Northeast Quarter (W1/2NE1/4); and the Northwest Quarter (NW1/4)

and containing a total of 360 acres, more or less.

There is transferred hereby all of the right, title, and interest in and to the surface estates overlying and the mineral estates underlying the above-described property as acquired by the United States of America as follows:

A PORTION OF TVA LAND ACQUISTION TRACT NO. EDGB-1

Fee simple title to the surface and mineral estates to the South one-half of the Northwest quarter (S1/2NW1/4), containing eighty (80) acres, more or less; and fee simple title to the surface estate overlying the Southwest quarter of the Northeast quarter (SW1/4NE1/4), containing approximately forty (40) acres, more or less; both in Section 17.

Acquisition Tract No. EDGB-1 was acquired by the United States of America (USA) for the use and benefit of the Tennessee Valley Authority (TVA) from Philip J. Erschen and wife, Dorothy Erschen, by virtue of the Warranty Deed dated June 29, 1982, of record in Deed Book 93, page 548, in the office of the Register of Deeds, Fall River County, South Dakota.

Said property is transferred subject to such rights as may be vested in third parties to the oil, gas, and other mineral rights and in particular to that certain Oil and Gas Lease dated October 22, 1979, of record in Miscellaneous Book 89, page 77, in the office of the Register of Deeds, Fall River County, South Dakota. Said property is also transferred subject to such rights as may be vested in the State and/or county to a right-of-way for a road.

A PORTION OF TVA LAND ACQUSITION TRACT NO. EDGB-2

Fee simple title to the surface estate overlying the South one-half of the Southwest quarter (S1/2SW1/4); and fee simple title to the surface estate overlying the Southwest quarter of the Southeast quarter (SW1/4SE1/4); both in Section 8; and fee simple title to the surface estate overlying the North one-half of the Northwest quarter (N1/2NW1/4); and fee simple title to the surface estate overlying the Northwest quarter of the Northeast quarter (NW1/4NE1/4) both in Section 17, all in Township 9 South, Range 3 East of the Black Hills Principal Meridian, and containing two hundred and forty (240) acres, more or less.

Tract No. EDGB-2 was acquired by the USA for the use and benefit of TVA from Russell D. Heppner, by virtue of the Warranty Deed dated March 13, 1981, of record in Deed Book 92, page 534, in the office of the Register of Deeds, Fall River County, South Dakota.

Tract No. EDGB-2 is transferred subject to such rights as may be vested in third parties to the oil, gas, and other mineral rights, including but not limited to those rights reserved by the State of South Dakota by virtue of Patent No. 24013 dated February 11, 1981, of record in Patent Book 12, page 205 in the office of the Register of Deeds, Fall River Coutny, South Dakota.

ALL OF TVA LAND ACQUISTION TRACT NOS.
EDGB-1M (PARCEL A) AND EDGB-2M (PARCEL A)

Tract No. EDGB-1M (Parcel A): Fee simple title to the mineral estate underlying the Southwest quarter of the Northeast quarter (SW1/4NE1/4) of Section 17, Township 9 South, Range 3 East of the Black Hills Principal Meridian, and containing forty (40) acres, more or less.

Tract No. EDGB-2M (Parcel A): Fee simple title to the mineral estate underlying the Northwest quarter of the Northeast quarter (NW1/4NE1/4); and fee simple title to the mineral estate underlying the North one-half of the Northwest quarter (N1/2NW1/4) of Section 17, Township 9 South, Range 3 East of the Black Hills Principal Meridian, and containing one hundred and twenty (120) acres, more or less.

Tract Nos. EDGB-1M and EDGB-2M were acquired by the USA for the use and benefit of TVA from Frank K. Scott, by virtue of the Warranty Deed dated February 12, 1982, of record in Miscellaneous Book 96, page 139, in the office of the Register of Deeds, Fall River County, South Dakota.

A PORTION OF TVA LAND ACQUISTION TRACT NO. EDGB-5M

A permanent easement to the mineral estate underlying the South one-half of the Southwest quarter (S1/2SW1/4) of Section 8, Township 9 South, Range 3 East of the Black Hills Principal Meridian, and containing eighty (80) acres, more or less.

Tract No. EDGB-5M was acquired by the USA for the use and benefit of TVA from the State of South Dakota, by virtue of the Grant of Permanent Easement to Mineral Estate dated July 29, 1985, of record in Miscellaneous Book 96, page 380, in the office of the Register of Deeds, Fall River County, South Dakota.

Tract EDGB-5M is transferred subject to such rights as were reserved by the State of South Dakota to further easements and rights-of-way for irrigation ditches and canals, as provided by South Dakota Codified Laws 5-4-2, so long as they do not infringe upon the rights granted.

Exhibit B

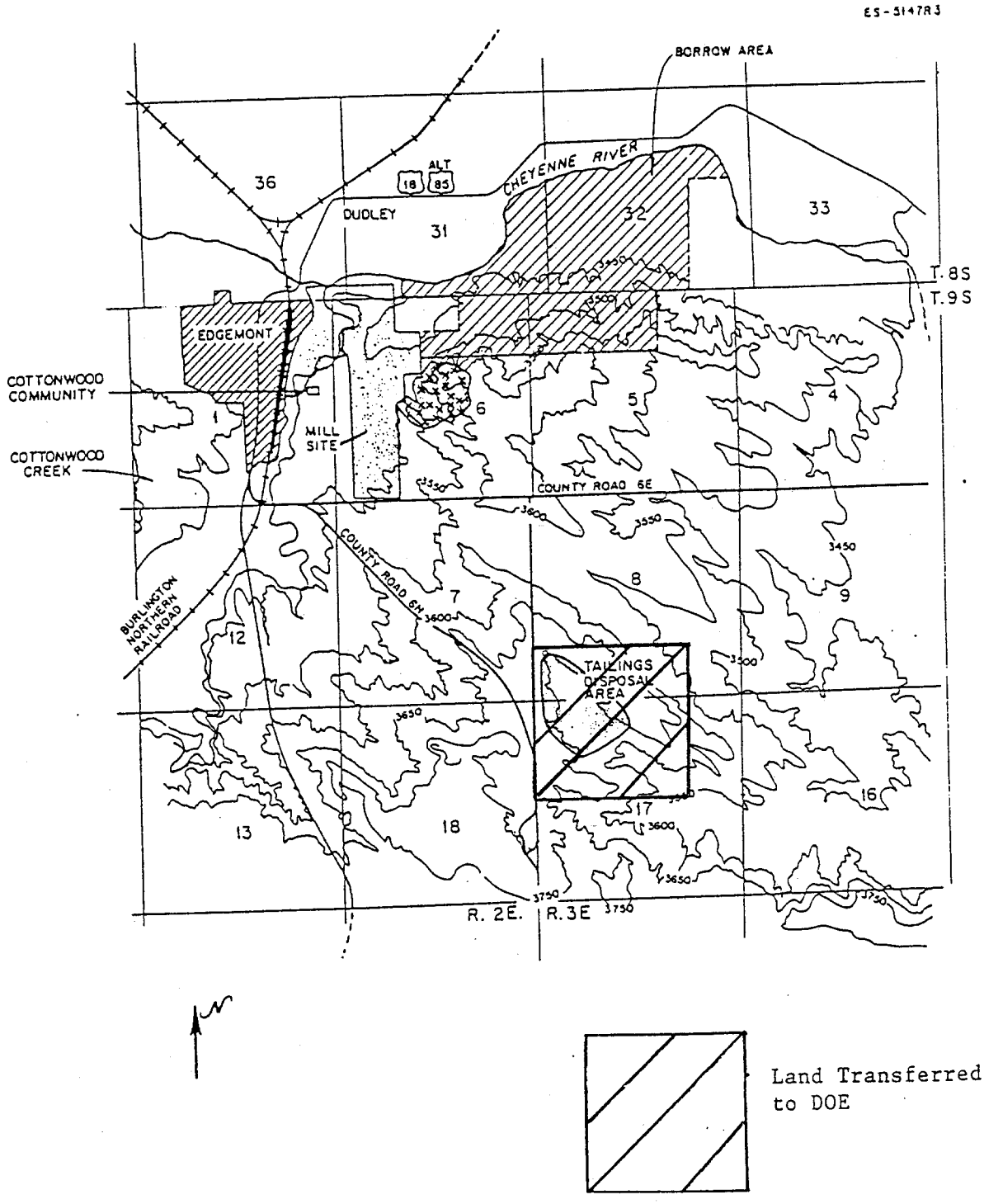

Fig. 2.1. Edgemont mill site, disposal site, and borrow area. Source: Modified from ER, rev. 1, Fig. 2.1-3 and Ford, Bacon & Davis Utah, Inc., *Engineering Assessment of Inactive Uranium Mill Tailings, Edgemont Site, Edgemont, South Dakota,* prepared for the U.S. Nuclear Regulatory Commission, Contract No. E(05-1)-1658, January 1980.

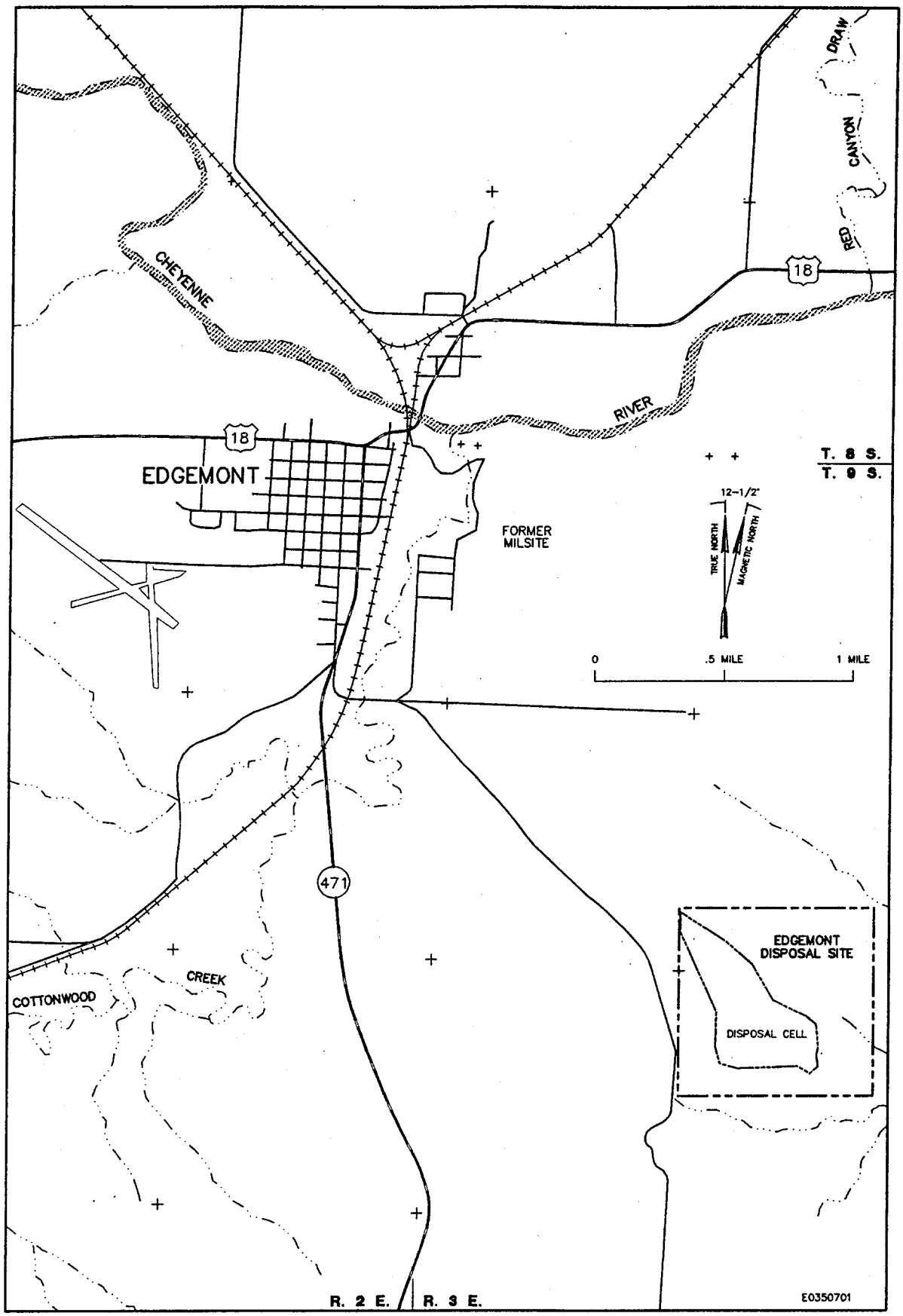

Figure 2-2. Property Location for Edgemont Disposal Site

The Plates are not available in electronic format.

Please contact Wendee Ryan to request Plate.